

WHAT IS CLAIMED IS:

1. A method of inhibiting growth and reproduction of microorganisms in a cooling water system used in an industrial process, comprising the steps of:
 - a) providing cooling water;
 - b) adding an effective amount of deactivatable biocide to the cooling water; and
 - c) adding an effective amount of a neutralizing agent to the cooling water to deactivate the biocide before or upon disposal of the cooling water.
2. A method according to claim 1, wherein the biocide is added in an amount of at least 1 ppm.
3. A method according to claim 1, wherein the biocide is added in an amount of at least 10 ppm.
4. A method according to claim 1, wherein the biocide is added in an amount of at least 100 ppm.
5. A method according to claim 1, further comprising a step (d) releasing the cooling water into a natural environment after the biocide has been deactivated.
6. A method according to claim 1, further comprising a step (d) discharging the cooling water into a biological oxidation facility.
7. A method according to claim 1, wherein the biocide is an aldehyde and the neutralizing agent is a nitrogen-containing compound selected from the group consisting of amines, amino acids, amino alcohols, and mixtures thereof.

8. A method according to claim 1, wherein the biocide is an alkyne and the neutralizing agent is a hydrogenation catalyst and H₂.
9. A method according to claim 7, wherein the biocide is glutaraldehyde and the nitrogen-containing compound is selected from the group consisting of monethanolamine, diethanolamine, methyldiethanolamine, and diethylamine.
10. A method according to claim 1, wherein after the neutralizing agent is added, the cooling water supports visible growth of microorganisms in less than 10 days when exposed to a certified inoculum, growth media, and rapidly biodegradable substance under ambient conditions.
11. A method according to claim 1, wherein after the neutralizing agent is added, the cooling water supports visible growth of microorganisms in less than 5 days when exposed to a certified inoculum, growth media, and rapidly biodegradable substance under ambient conditions.
12. A method of inhibiting growth and reproduction of microorganisms in a cooling water system for a Fischer Tropsch facility, comprising the steps of:
 - a) providing cooling water;
 - b) performing a Fischer-Tropsch synthesis process;
 - c) isolating Fischer-Tropsch-derived liquid products from the Fischer-Tropsch process;
 - d) isolating Fischer-Tropsch derived deactivatable biocides from the Fischer-Tropsch process;
 - e) adding an effective amount of the Fischer-Tropsch derived deactivatable biocide to the cooling water; and

- f) adding an effective amount of a neutralizing agent to the cooling water to deactivate the biocide before or upon disposal of the cooling water.
- 13. A method according to claim 1, wherein the biocide is added in an amount of at least 100 ppm.
- 14. A method according to claim 12, further comprising a step (g) releasing the cooling water into a natural environment after the biocide has been deactivated.
- 15. A method according to claim 12, further comprising a step (g) discharging the cooling water into a biological oxidation facility.
- 16. A method according to claim 12, wherein the biocide is glutaraldehyde and the nitrogen-containing compound is selected from the group consisting of monethanolamine, diethanolamine, methyldiethanolamine, and diethylamine.
- 17. A method according to claim 12, wherein the cooling water supports growth of microorganisms in less than 5 days after adding the neutralizing agent under ambient conditions when exposed to a certified inoculum, growth media, and a hydrocarbonaceous product.
- 18. A method according to claim 12, wherein the biocide is an alkyne and the neutralizing agent is a hydrogenation catalyst and H₂.
- 19. A method according to claim 12, wherein the Fischer-Tropsch derived deactivatable biocides are isolated by distillation or chromatographic separation.
- 20. A method of inhibiting growth and reproduction of microorganisms in a cooling water system for a Fischer Tropsch facility, comprising the steps of:
 - a) providing cooling water;

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- b) performing a Fischer-Tropsch synthesis process to provide a product stream;
- c) fractionally distilling the product stream and isolating liquid hydrocarbonaceous products and oxygenates;
- d) subjecting the oxygenates to oxidation to form aldehydes;
- e) adding an effective amount of the aldehydes to the cooling water to resist visible growth for at least 10 days under ambient conditions when exposed to a certified inoculant; and
- f) adding an effective amount of a neutralizing agent to the cooling water to deactivate the aldehydes before or upon disposal of the cooling water.

21. A method according to claim 20, wherein the biocide is added in an amount of at least 100 ppm.

22. A method according to claim 20, wherein the biocide is glutaraldehyde and the neutralizing agent is selected from the group consisting of monethanolamine, diethanolamine, methylidethanolamine, and diethylamine.

23. A method according to claim 20, wherein the oxygenates are isolated from light Fischer Tropsch products.

24. A method of inhibiting growth and reproduction of microorganisms in a cooling water system for a Fischer Tropsch facility, comprising the steps of:

- a) providing cooling water;
- b) performing a Fischer-Tropsch synthesis process to provide a product stream;

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- c) fractionally distilling the product stream and isolating liquid hydrocarbonaceous products and olefins;
- d) subjecting the olefins to dehydrogenation to form alkynes;
- e) adding an effective amount of the alkynes to the cooling water to resist visible growth for at least 10 days under ambient conditions when exposed to a certified inoculant; and
- f) adding an effective amount of a neutralizing agent to the cooling water to deactivate the alkynes before or upon disposal of the cooling water.

25. A method according to claim 24, wherein the biocide is added in an amount of at least 100 ppm.

26. A method according to claim 24, wherein the alkynes are primary alkynes and the neutralizing agent is a hydrogenation catalyst and H₂.

27. A method according to claim 24, wherein the olefins are formed from a thermal cracking process which uses a heavy Fischer Tropsh feed derived from a Fischer Tropsch process.

28. A method according to claim 24, wherein the olefins are isolated from light Fischer Tropsch products.